$$f'(x)=\frac{\frac{1}{2\sqrt{x}}(\sqrt{x}+2)-\frac{1}{2\sqrt{x}}(\sqrt{x}-2)}{(\sqrt{x}+2)^2}$$

$$f'(x)=\frac{2}{\sqrt{x}.(\sqrt{x}+2)^2}$$

EXERCICE№6

f $(x) = x^3 - 3x$ $\quad g(x) = x - \frac{4}{x}$

1) $M(x,y) \in (\mathcal{C})\cap(\mathcal{C}') \Leftrightarrow \begin{cases} y = x^3 - 3x \\ y = x - \frac{4}{x} \end{cases} \Leftrightarrow \begin{cases} x^3 - 3x = x - \frac{4}{x} \\ y = x^3 - 3x \end{cases}$

$\Leftrightarrow \begin{cases} x^3 - 4x + \frac{4}{x} = 0 \\ y = x^3 - 3x \end{cases} \Leftrightarrow \begin{cases} x^4 - 4x^2 + 4 = 0 \\ y = x^3 - 3x \end{cases} \Leftrightarrow \begin{cases} (x^2 - 2)^2 = 0 \\ y = x^3 - 3x \end{cases}$

$\Leftrightarrow \begin{cases} x^2 = 2 \\ y = x^3 - 3x \end{cases} \Leftrightarrow \begin{cases} x = -\sqrt{2} \\ y = \sqrt{2} \end{cases}$ ou $\begin{cases} x = \sqrt{2} \\ y = -\sqrt{2} \end{cases}$

D'où : $(\mathcal{C})\cap(\mathcal{C}') = \{A(-\sqrt{2}, \sqrt{2}), B(\sqrt{2}, -\sqrt{2})\}$

2) * $f'(x) = 3x^2 - 3$

$g'(x) = 1 + \frac{4}{x^2}$

* $f'(-\sqrt{2}) = g'(-\sqrt{2}) = 3$

d'où : $(\mathcal{C})$ et $(\mathcal{C}')$ admettent la même tangente (T_A) en A

$(T_A) : y = 3(x + \sqrt{2}) + \sqrt{2}$

$(T_A) : y = 3x + 4\sqrt{2}$

* $f'(\sqrt{2}) = g'(\sqrt{2}) = 3$

$(T_B) : y = 3(x - \sqrt{2}) - \sqrt{2}$

$(T_B) : y = 3x - 4\sqrt{2}$

EXERCICE№7

1) <u>continuité en (-1)</u>

f(-1) = 0

* $\lim\limits_{x \to (-1)^-} f(x) = \lim\limits_{x \to (-1)^-} \sqrt{-x-1} = 0 = f(-1)$

* $\lim\limits_{x \to (-1)^+} f(x) = \lim\limits_{x \to (-1)^+} (x^2 - 1) = 0 = f(-1)$